



## **Technical Memorandum**

### **Surface Impoundment Cap Evaluation for Erosion**

**Gulfco Marine Maintenance Superfund Site  
906 Marlin Avenue  
Freeport, Brazoria County, Texas  
EPA Identification No. TXD0055144539**

**Non-Time Critical Removal Support  
Contract: EP-W-06-004  
Task Order: 0067-NSEE-06JZ**

*Prepared for*

U.S. Environmental Protection Agency  
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## **1.0 INTRODUCTION**

This technical memorandum documents the visual observations of the Surface Impoundment Cap performed by EA Engineering, Science, and Technology, Inc. (EA) for the former Gulfco Marine Site (Site) located in Freeport, Brazoria County, Texas. Inspection of the CAP was conducted on 15 December 2010. This work was completed for the U.S. Environmental Protection Agency (EPA) Region 6 as part of Task Order No. 0067-NSEE-06JZ under EPA Contract No. EP-W-06-004, in accordance with a Statement of Work (SOW) issued by EPA in October 2010.

The site consists of approximately 40 acres within the 100-year coastal floodplain along the north bank of the Intracoastal Waterway between Oyster Creek to the east and the Old Brazos River Channel to the west. During the 1960's, the Site was used for occasional welding and was used as a barge cleaning facility 1971 through 1999. Occasional sandblasting and barge repair/refurbish also occurred onsite. The surface impoundments were closed under the Texas Water Commission's (Texas Commission on Environmental Quality (TCEQ) predecessor agency) direction in 1982 (PBW, 2010). Previous reports and observations have document erosion and rutting in the cover.

## **2.0 SURFACE IMPOUNDMENT COVER EVALUATION**

A visual Site reconnaissance was performed on 15 December 2010 by John Conquest, a State of Texas licensed Professional Engineer. The primary objective of the site visit was to visually observe the existing conditions.

### **2.1 EXISTING CONDITIONS**

The elevation of the surface impoundment cap is approximately 2 feet higher than the surrounding existing natural surface grade. The existing cap is approximately 2.5 to 3.5 feet thick. The clay cap appeared to be in good condition with no surface cracking during the site investigation. The photo below shows the typical elevation differences between the cap, to the right, and the surrounding areas.



## 2.2 VEGETATION

The surface of the clay cap is covered with a layer of oyster shells and vegetation. Cap vegetation consists of mostly grasses with some brush. The majority of the brush is located along the perimeter of the cap with isolated patches within the interior portions of the cap. The photo below shows typical cap vegetation.



## 2.3 VEHICULAR TRAFFIC

Evidence of vehicular traffic along the perimeter of the cap was observed during the site investigation. Wheel tracks have formed ruts in portions of the vegetation along the western side of the cap. The rutting was generally no more than 3 inches deep with one location found to be approximately 6 inches deep. The photo below is an example of typical vehicle paths through the ground cover.



The photo below details the area of deepest rutting (approximately 6-inches).



## 2.4 SURROUNDING AREA

The perimeter of the cap was inspected during site reconnaissance. It was found to be in good condition with no visible rill erosion.

## 3.0 CONCLUSIONS

There is no obvious maintenance of the cap as evidenced by the presence of woody vegetation around the perimeter of the cap and on a few areas on top of the cap. The roots of woody vegetation could compromise the clay layer of the cap and allow infiltration and contribute to migration of contaminants away from the confines of the former impoundment.

Even though there is no evidence of erosion, the obvious rutting of the cap on the western edge has not been repaired and could also lead to compromise of the clay layer.

Based on the field inspection and cores collected during the 3 August 2006 field effort, the clay layer of the cap is estimated to be 2.5 to 3.5 feet thick (PBW 2009). The estimated hydraulic conductivity of the current clay layer was determined to be  $1 \times 10^{-7}$  cm/sec (PBW 2009). The surface of the current cap is approximately 6 inches thick and composed of crushed shells.

The February 2002 HRS Documentation Record recounted the Texas Department of Water Resources to deny the PRP request to classify the waste material in the impoundments as Class II. They did classify the material as Class I waste pursuant to Texas Administrative Code, Title

30, Chapter 335, Subchapter R, Rule §§ 335.505-335.507. The TNRCC guidelines for a Class I cap calls for a minimum compacted clay layer four feet thick and a conductivity of  $1 \times 10^{-7}$  cm/sec or less (TNRCC 2004). The guidelines also indicate the clay should be covered with 18 inches of topsoil or other acceptable material to minimize erosion. They recommend that the cap be vegetated with shallow rooting species to minimize disruption of the cover and established to aid in evapotranspiration.

Therefore, the current impoundment cap clay layer does not meet the requirements for a Class 1 impoundment, nor does the current surface layer. The cap is vegetated but woody growth needs to be cut or removed.

## **REFERENCES**

Pastor, Behling & Wheeler, LLC (PBW). 2009. Nature and Extent Report for the Gulfco Marine Maintenance Site, Freeport, Texas. 20 May.

PBW. 2010. Final Screening-Level Ecological Risk Assessment, Gulfco Marine Maintenance Superfund Site, Freeport, Brazoria County, Texas, EPA Facility ID: TXD0055144539, May.

Texas Natural Resource Conservation Commission (TNRCC). 2004. Industrial Solid Waste Management. Technical Guideline No. 3. Revised 13 October.

Texas Secretary of State. Texas Administrative Code, Title 30, Part 1, Chapter 335, Subchapter R, Rule §§335.503 - 335.507.

U.S. Environmental Protection Agency (EPA). 2010. RAC II Statement of Work for Non-Time Removal Support, Gulfco Marine Maintenance, Freeport, Texas. Contract No. EP-W-06-004. 6 October.